ATOMIC ENERGY newsletter®

A SERVICE FOR INDUSTRY BUSINESS ENGINEERING AND RESEARCH

ROBERT M. SHERMAN, EDITOR. PUBLISHED BI-WEEKLY BY ATOMIC ENERGY NEWS CO., 1000 SIXTH AVENUE, NEW YORK 18, N. Y.

September 29, 1959
Vol. 22...No. 4

Dear Sir:

The second U. S. missile-firing nuclear powered submarine, the Patrick Henry, was launched last week at Groton, Conn., from the shipyards of Electric Boat division of General Dynamics Corp. Nuclear power plant of the craft was designed and built by Westinghouse Electric staff, at Bettis atomic power laboratory which the company operates for the USAEC. Improvements incorporated in the nuclear reactor core of the Patrick Henry are expected to enable the ship to cruise in excess of the 62,000 miles of satisfactory performance which the first U. S. submarine, the Nautilus, obtained from its reactor core before it became necessary to service it. (Other MANUFACTURERS' NEWS, p. 4 this LETTER.)

New development and manufacturing company, Radiation Counter Laboratories, Inc., of California, Berkeley, Calif., has been formed by Radiation Counter Laboratories, Inc., Chicago, Ill. Ernest H. Wakefield, president and founder of the parent Chicago firm will head the California organization. First product the California firm will manufacture is a pulsating neutron source (D-T reactor) based on a design by J. D. Gow and L. Ruby. This neutron stove, as it is called, will round out the company's line and provide it with a complete neutron source-analyzer system for use in non-destructive testing. (Other PRODUCT NEWS, p. 4 this LETTER.)

Some 4000 USAEC research reports issued to July, 1959, are in the latest semi-annual price list of available unclassified reports of USAEC research. The new list which is no. 32, may be obtained free from Office of Technical Services, Wash. 25, D.C. (Other BOOKS, PUBLICATIONS, p. 5 this LETTER.)

Dedication of Norway's Halden reactor has been scheduled for October 10, at ceremonies to be presided over by H. M. King Olav of Norway. The reactor, of the boiling heavy water type, has been built by the Norwegian Institutt for Atomenergi. It is to be used for an O.E.E.C. - sponsored program of research participated in by Norway, Denmark, Austria, Sweden, Switzerland, the U. K., and EURATOM (comprising Belgium, France, Germany, Italy, Luxembourg, and Holland.) (The reactor has been working at low power levels since June 29, 1959 to enable fundamental reactor physics experiments to be performed. Power level will be gradually increased toward the ultimate design level of 20,000 kw of heat energy.) (Other REACTOR NEWS, p. 2 this LETTER.)

Industrial and commercial uses of nuclear power, and applications of radio-isotopes and radiation, will be discussed Oct. 21-22 at a semi-technical conference in Jackson, Miss. Sponsored by ten Mississippi organizations, the sessions are under the guidance of the Mississippi Industrial Research Center, P.O. Box 1037, Jackson, Miss., from whom further details may be obtained...Third regular session of the International Atomic Energy Agency's General Conference which opened in Vienna last week, has been devoted mainly to the program and budget for 1960, as prepared by the IAEA Board of Governors. A total estimated budget of $8,233,000 for 1960 compares with $6,788,000 for 1959. (Other MEETINGS, COURSES, CONFERENCES, p. 5 this LETTER.)

Copyright, Atomic Energy Newsletter. All rights reserved.

ATOMIC ENERGY BUSINESS NEWS...

SITE CHOSEN FOR CANADIAN NUCLEAR POWER PLANT: A 23,300 acre site for the first commercial nuclear power plant in Canada has been chosen on the shore of Lake Huron, nine miles north of Kincardine, Ontario; selection of site was by Ontario Hydro, as "better suited to its needs than any other investigated", according to J. S. Duncan, chairman of the utility company. If approved by the Atomic Energy Control Board of Canada, the site will become the location of the 200,000 kw CANDU (Canadian deuterium uranium) nuclear power plant, a $60,000,000 project to be built by Atomic Energy of Canada, Ltd. (Ontario Hydro will provide transmission lines to feed the output to Southern Ontario.) Design work is now underway on the plant; construction is not expected to start before 1961.

TWO NEW FIRMS IN RADIOACTIVE WASTE DISPOSAL BUSINESS: Two California firms are being licensed by the USAEC to collect low-level radioactive wastes and dispose of them in the Pacific Ocean, One firm to be licensed, California Salvage Co., San Pedro, Calif., will add concrete to its drums to assure their sinking. The other firm, Ocean Transport Co., San Francisco, Calif., will receive properly weighted drums. Disposal will be in 1,000 fathoms, beyond the continental shelf.

HIGH FLUX TEST REACTOR BEING STUDIED: Phillips Petroleum Co.'s staff at the National Reactor Testing Station, Arco, Idaho, has been assigned the task of performing a conceptual design study of a high-flux test reactor incorporating the most advanced technology available. Job was let by the USAEC's Idaho Falls, Idaho, office. Objective is to determine the kind of test reactor that will meet the Commission's needs for neutrons in the high-flux range over and above those needs which can be met in reactors built or planned. (Test reactors now operating in U.S. are Engineering Test Reactor and Materials Testing Reactor, operated at the NRTS by Phillips; General Electric Co.'s Test Reactor at Pleasanton, Calif.; and the Westinghouse Test Reactor at Waltz Mill, Pa.)

SECOND U.S. GAS-COOLED REACTOR TO BE BUILT: The Experimental Gas-Cooled Reactor (EGCR) for which site at Oak Ridge, Tenn., is being prepared will be built by H. K. Ferguson Co., Cleveland, under contract awarded the firm by the USAEC. Ferguson, as construction contractor, will do the work, estimated at $30 million, on a cost-plus-fixed-fee basis, and will also do alterations and modifications to Commission production plants and laboratories at Oak Ridge. The EGCR, second such U.S. gas-cooled reactor (other is 40,000 electrical kw Philadelphia Electric Co. plant in York County, Pa. now under construction) will be fueled with slightly enriched uranium dioxide clad in stainless steel, moderated with graphite, and cooled with helium. It will be designed to produce 85,000 thermal kw for generation of about 25,000 electrical kw. Its main purpose is to allow experimental work with fuel elements, gas coolants, and materials and components. Design of the EGCR is being done by Kaiser Engineers, Oakland, Calif., and Allis-Chalmers Manufacturing Co., Washington, D. C.

DELAY IN CONSTRUCTION PROPOSALS BELIEVED IMMINENT: Although deadline is October 20, 1959 for detailed specifications and construction proposals under the U. S. - EURATOM million kw nuclear power plant program, it now appears that of the five organizations which sent letters of intent last May, only one will have its specifications in on time. The company ready will be Societa Elettronucleare Nazionale (SENN), of Italy, in whose power complex the nuclear power plant will be incorporated. (See this LETTER, p. 5, FINANCIAL NEWS) Of the two German projects, the one in Berlin is at a very early stage, and the second, sponsored by the Stuttgart A.K.S. group is said to be running into difficulties and requires extra time. (Some uncertainty has also been caused by the feeling that there will be lower uranium prices when the present U. S. - propped market is normalized in 1962-63; it is one of the reasons EURATOM will not stockpile uranium. The fall in coal prices in Europe, through lowered ocean freight rates on the imported U. S. coal, has also acted to make nuclear power less attractive.)

PROCESS HEAT REACTOR TO BE BUILT: Sargent & Lundy, Chicago, will design and build a $4 million, 40,000 thermal kw pressurized water reactor for the USAEC; firm was selected by the Commission on basis of its proposal for this experimental low-temperature process heat reactor. The Department of the Interior has asked the Commission to assist in its second sea water distillation project by supplying reactor heat; consequently this process heat reactor will be on the California coast, which is the projected site of distillation plant. (First distillation plant will be in Freeport, Tex.)

ATOMIC ENERGY FINANCIAL NEWS...

LOAN MADE FOR NUCLEAR FACILITY: Forty million dollars have been loaned to Italy by the World Bank for construction of a 150,000 electrical kw nuclear power plant between Rome and Naples. The loan, the first made by the bank for a nuclear project, was to the Casa per Il Mezzogiorno, an Italian Government agency, which will relend the money to Societa Elettronucleare Nazionale (SENN), a company set up in 1957 especially for the nuclear power plant. The Republic of Italy will guarantee the loan, which will cover about 60% of the estimated $66.4 million cost of the project. It is for a 20-year term, at 6%, including the 1% commission which is allocated to the bank's special reserve. Amortization payments will start Feb. 15, 1964. The reactor, of the boiling water type, will use enriched uranium to be obtained from the U. S. through EURATOM. General Electric Co. (U.S.), through its Swiss subsidiary, will design and build the entire plant, supplying equipment, fabricating fuel, etc.; it will be a "turn key" job. Operating date of late 1963 is planned.

DEBENTURE ISSUE OVERSUBSCRIBED: The $6.5 million issue of 5% convertible debentures, due 1974, of Brush Beryllium Co., was oversubscribed after being placed on the market last fortnight by a Kuhn, Loeb & Co., McDonald & Co., underwriting group. The issue is convertible into Brush Beryllium common at rate of one share for each $48.50 principal amount of debenture. A sinking fund, which starts in 1963, is designed to retire 60% of the issue prior to maturity. Redemption option allows the company to redeem the issue at any time at prices ranging from 106 down to par. Brush, fabricator of beryllium for nuclear applications, holds substantial contract to supply the USAEC with the metal.

ATOMIC ENERGY PATENT DIGEST...

PATENTS ISSUED September 8, 1959 to PRIVATE ORGANIZATIONS AND/OR INDIVIDUALS: (1) Nuclear radiation measuring instrument. A. Somerville, inventor. No. 2,903,590 assigned to General Motors Corp., Detroit, Mich. (2) Method and apparatus for producing neutron log of a well. R. E. Fearon, J. M. Thayer, inventors. No. 2,903,594 assigned to Well Surveys, Inc.

PATENTS ISSUED September 8, 1959 to GOVERNMENTAL ORGANIZATIONS: (1) Travelling wave linear particle accelerators. J. W. Gallop, inventor. No. 2,903,578 assigned to National Research Development Corp., London, England. (2) Dosimeter. R. D. Huntoon, inventor. No. 2,903,593 assigned to Secretary of Commerce. (3) Uranium solvent extraction process. C. D. Harrington, inventor. No. 2,903,331 assigned to USAEC. (4) Separation of ruthenium from aqueous solutions. C. F. Callis, R. L. Moore, inventors. No. 2,903,332 assigned to USAEC. (5) Rare earth-actinide separation by adsorption. C. S. Lowe, W. H. McVey, inventors. No. 2,903,333 assigned to USAEC. (6) Preparation of uranium trioxide. J. S. Buckingham, inventor. No. 2,903,334 assigned to USAEC. (7) Separation of fission products from plutonium by precipitation. G. T. Seaborg, S. G. Thompson, N. R. Davidson, inventors. No. 2,903,335 assigned to USAEC. (8) Thorium-beryllium alloys and method of producing same. F. H. Speeding, H. A. Wilhelm, W. H. Keller, inventors. No. 2,903,351 assigned to USAEC. (9) Radioactive object and method of making same. L. M. Dorfman, F. J. Shipko, inventors. No. 2,903,383 assigned to USAEC. (10) Recovery of valuable material from graphite bodies. L. W. Fromm, inventor. No. 2,903,402 assigned to USAEC. (11) Phase detector. D. O. Kippenham, inventor. No. 2,903,581 assigned to USAEC. (12) Tapered defining slot. F. W. Pressey, inventor. No. 2,903,586 assigned to USAEC. (13) Calutron receiver structure. J. L. Roush, inventor. No. 2,903,587 assigned to USAEC.

PATENTS ISSUED September 15, 1959 to PRIVATE ORGANIZATIONS AND/OR INDIVIDUALS: (1) Fluorescent x-ray screens. F. J. Masi, A. F. Millett, inventors. No. 2,904,689 assigned to U. S. Radium Corp., New York, N.Y. (2) Aerial prospecting. R. P. Mulligan, inventor. No. 2,904,691 assigned to Texaco, Inc. (3) Irradiation of wax. H. L. Thwaites, J. F. Black, inventors. No. 2,904,482 assigned to Esso Research & Engineering Co. (4) Hydrocarbon radiochemical reactions. R. B. Long, H. J. Hibshman, inventors. No. 2,904,483 assigned to Esso Research & Development Co. (5) Radiochemical reactions. R. W. Houston, B. L. Tarmy, R. B. Long inventors. No. 2,904,484 assigned to Esso Research & Engineering Co. (6) Radiochemical treatment of heavy oils. B. L. Tarmy, R. B. Long, inventors. No. 2,904,485, assigned to Esso Research & Development Co.

NEW PRODUCTS, PROCESSES, SERVICES...for laboratory & plant...

NEW PRODUCTS: Analysis unit, Model L-75D, consists of an ionization chamber and quartz electrometer powered by a self contained, transistorized power supply. It is also available in kit form as Model L-75K, and includes light source, sample holders, filters, planchets, etc., for measurement of radioactivity. Landsverk Electrometer Co., Glendale, Calif.

New portable paper tape air sampler for recording dust or gas concentrations will automatically collect up to 900 dust or gas samples. Volume of air per sample is adjustable from 1.5 to 36 cu. ft. When used to sample for radioactive fallout, measurement of deposited sample on tape is made with standard counters and scalers. Gelman Instrument Co., Chelsea, Michigan.

PRODUCT NEWS: Almost pure lithium-7 is now offered by the USAEC at sharply reduced prices. This material--lithium hydroxide monohydrate enriched in the isotope lithium-7 -- had previously been obtainable from the Commission only in small quantities at $150 to $300 per gram. The new price schedule is $120 per kilogram for 99.99% enriched material; $107 for 99.98% enrichment; and $100 for 99.97% enrichment. Orders are to be placed with Union Carbide Nuclear Co., Oak Ridge, Tenn., operator of the USAEC's facility there. Further information is in TID 4020, Code C-2, "Charges and Specifications for Lithium-7 Hydroxide Monohydrate", available from USAEC, P.O. Box 62, Oak Ridge.

Growth of the U. S. uranium mining and milling industry is graphically shown in statistics now revealed on uranium oxide bought by the USAEC from domestic and foreign sources. For the years 1943 to 1947 inclusive, 1,440 tons were bought from domestic sources; 10,150 tons from foreign sources. In 1948, U. S. supplied 110 tons; foreign sources 1,960 tons. In 1949, U. S. supplied 120 tons; foreign sources 1,960 tons. In 1950, U. S. supplied 320 tons; foreign sources 2,740. In 1951, U. S. supplied 630 tons; foreign sources 3,050. In 1952, U. S. supplied 830 tons; foreign sources 2,830. In 1953, U. S. supplied 990 tons; foreign sources 1,910. In 1954, U. S. supplied, 1,450 tons; foreign sources 3,240. In 1955, U. S. supplied 2,140 tons; foreign sources 3,800. In 1956, U. S. supplied 4,200 tons; foreign sources 6,240. In 1957, U. S. supplied 7,580 tons; foreign sources 8,580. In 1958, U. S. supplied 10,250 tons; foreign sources 16,130. In 1959, U. S. supplied 15,160 tons; foreign sources 18,170.

Some 3,060 short wet tons of rare earth material originally acquired for the USAEC by the General Services Administration are now offered for sale on a negotiated basis by the GSA. The material is packaged in 250-lb. drums.

TECHNIQUES: Radiometric technique, to speed up the analysis of magnesium oxide in portland cement, has been developed at Battelle Memorial Institute, Columbus, Ohio, in a study of tracer quality-control systems for the USAEC. The new procedure is said to cut the time required for such an analysis from 28 hours to less than one hour. In a concentration range of 5 to 15 mg of magnesium oxide per 100 ml, accuracy of results are said to have been within 0.05% when the results are expressed as per cent of magnesium oxide in cement. (The technique was described in some detail at last week's Industrial Nuclear Technology Conference, in Chicago, by the Battelle people responsible: D. N. Sunderman, M. Pobereskin, J. E. Howes, C. T. Brown, and P. Schall.)

MANUFACTURERS' NEWS: An order has been received by Alco Products, Inc., Schenectady, N.Y., to build the steam generator for the 11.4 megawatt organic moderated and cooled nuclear power reactor planned at Piqua, Ohio. Atomics International division of North American Aviation, Inc., which placed the order with Alco, holds a $7.7 million USAEC contract to build the nuclear power plant. The carbon-steel steam generator, which will be part of the primary system in the Piqua plant, will be nominally rated at 150,000 lbs. per hour at 450 psia. It will deliver steam at 550 deg. F. to the City of Piqua's municipal utility plant across the Miami river. The Alco-built unit will operate in a vertical position, in line with a design the firm developed and previously used in the two Army "package power" reactors, SM-1 and SM-1A.

The new industrial automation division of Victoreen Instrument Co., Cleveland, has now been put into operation. New applications for radiation and radiation control in the chemical, pharmaceutical and petroleum fields will be the particular interest of the new division.

NEW BOOKS & OTHER PUBLICATIONS...

Nuclear Plant Data, Vol. 2: Research & Test Reactors. Prepared by American Society of Mechanical Engineers. 297 pages. -- McGraw-Hill Book Co., New York 36, N.Y. ($7.50)

Heat Transfer Engineering: Hilbert Schenck, Jr., editor. For the engineering library. 310 pages. -- Prentice-Hall, Inc., New York 11, N.Y. ($9.25).

Russian-English Atomic Dictionary: Physics: Mathematics: Nuclear Science and Technology. Revised 2nd edition. Eugene A. Carpovich. Good addition to science and technology libraries. 317 pages. -- Technical Dictionaries Co., Box 144, New York 31, N.Y.

Radioisotopes for Industry. Robert S. Rochlin, Warner W. Schultz, General Engineering Laboratory, General Electric Co. Radioisotope applications; facilities handling them; setup costs; etc. Of particular value to the industrial engineer plant manager. 210 pages. -- Reinhold Publishing Corp., 430 Park Ave., New York 22, N.Y.

Uranium: James Paone. Preprint from Bureau of Mines 1958 Yearbook, Vol. 1: to be available at a future date. 26 pages. -- Superintendent of Documents, Wash. 25, D.C. (15¢)

Heavy Water Moderated Power Reactors: A Symposium. Proceedings of symposium held Mar. 3-4, 1959 under sponsorship of USAEC. No. TID-7575. -- Office of Technical Services, Wash. 25, D.C. ($1.50)

NOTES: Some 120 documents on the dual-temperature hydrogen sulfide exchange process for production of heavy water (Spevack patent) are now available from Office of Technical Services, Wash. 25, D.C.

New quarterly publication of the USAEC is "Nuclear Safety", with first issue dated September, 1959. Subscriptions, at $2.00 the year, should be placed with Sup't. of Documents, Wash. 25, D.C.

Hearings on patent matters before Joint Congressional Committee on Atomic Energy, April 21-23, 1959 may be obtained as "Atomic Energy Patents", from Sup't. of Documents, Wash., 25, D.C., at 60¢ the copy.

MANUFACTURERS' LITERATURE: New brochure on General Electric Co.'s nuclear reactor control rod drives may be obtained as GEA-6609 from GE's Electric Apparatus Sales Div., Schenectady, N.Y.

Bulletin C of Victoreen Instrument Co. Cleveland, Ohio, describes over 50 nuclear instruments and monitoring systems. It is available on request to the company.

MEETINGS, COURSES, CONFERENCES...

SYMPOSIUM: Symposium on Advances in Tracer Methodology, scheduled for Oct. 23, 1959 in New York, will be sponsored by New England Nuclear Corp., in association with Atomic Associates, Inc., and Baird-Atomic, Inc. Papers will cover tracers for research and process control; low level counting; advances in nuclear instrumentations; etc. Program and further details may be obtained from New England Nuclear Corp., 575 Albany St., Boston 18, Mass.

MEETINGS: Forum on nuclear problems will be held at the American Society for Testing Material's Oct. 13, 1959 meeting in San Francisco. It is one of a series to acquaint the nuclear industry with activities in ASTM committees dealing with standardization of materials and test methods.

COURSES: Revision of course schedules in radioisotope techniques has been made by the special training division of the Oak Ridge Institute of Nuclear Studies. Previously there was a 4-week course in radioisotope techniques for research purposes, and a 6-week course in radioisotopes for industrial uses. The new schedule provides for all to take a 2-week course in basic radiation physics. Participants will then have the option of continuing in either of two simultaneous courses: one in basic radioisotope research techniques, and the other in industrial radioisotope techniques. For a final option, there will be advanced 2-week courses in both subjects.

NOTES: Floor space for the Atomic Exposition, to be held in New York April 4-7, 1960 will be available shortly after the first of next month. Managers will be the International Atomic Exposition, 117 So. 17th St., Phila. 3, Pa., from whom full details may be obtained.

Sincerely,

The Staff,
ATOMIC ENERGY NEWSLETTER

September 29, 1959